



California Integrated Waste Management Board

Economic Analysis of Organics Diversion Alternatives

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R·W·BECK

R.W. Beck, Inc.

- National business consulting and engineering firm
- Headquartered in Seattle, WA
- Comprehensive Solid Waste Services
 - *Solid Waste Facilities Planning and Design*
 - *Recycling Program Design*
 - *Collection, Processing, Transfer and Disposal Procurement*
 - *Operations and Performance Enhancement*
 - *Rates, Financial Analyses and Appraisals*



Presentation Summary

- Economic analysis goals and objectives
- Economic analysis approach and methodology
- Costs and revenues assumptions
- Operating data assumptions
- Offsets and benefits assumptions
- “Macro” economic analysis
- Data sources
- Next steps

Economic Analysis Goals and Objectives

- Estimate net costs of various scenarios of Green House Gas (GHG) emissions reduction technologies on a dollars per million metric tons per CO₂ equivalent (MMTCO₂) basis
- Estimate net costs of diversion (collection and processing) of organics and other recyclables on a dollars per ton basis
- Identify and quantify where possible, significant off-setting costs and potential benefits of GHG reduction and organic diversion technologies

Economic Analysis Goals and Objectives

- Determine direct, indirect and induced economic impacts of implementing GHG reduction and organics diversion technologies
- Develop cost data to be used in the development of a GHG tool

Economic Analysis Approach and Methodology

- Will be coordinating approach and methodology with CA Air Resources Board (CARB) to maintain consistency
- Will be consistent with scope and boundaries of the Life Cycle Assessment (LCA)

Collection costs assumptions

- Mixed MSW collection
- Source separated recyclables
- Single-stream mixed recyclables
- Collection distances
- Fuel
- Labor



Transfer Costs Assumptions

- Hauling distances
- Mode
- Fuel costs



Disposal and Processing Cost Assumptions

- Facility operating costs
 - Labor
 - Maintenance
 - Equipment
 - Utilities
 - Shipping
 - Administrative overheads
 - Other general operating costs



Revenues and Other Funding Sources

- Tip fees
 - Dependent on facility
- Finished Product Revenues
 - Compost
 - Baled recyclables
 - Sale of electricity/natural gas
 - Fertilizer
 - Other
- Other funding sources
 - Grants, loans

Capital Cost Assumptions

- Initial facility costs
 - Use actual data from operating facilities, where available
 - Develop projections for facilities needed in the future
- Service life assumptions
 - 15-20 years depending on facility
- Financing assumptions
 - Funding sources
 - Debt service
- Projected annual O&M costs



Operating Data

- Actual operating data and 20-year projections
 - Tons collected
 - Tons disposed
 - Tons of finished product (compost)
 - Tons of residue
 - Energy generation



Net Unit Cost Calculation for Scenarios of GHG Reduction Technologies

	2006	2007	2008	2009	20102025
Revenues						
- Operating						
- Other						
Total Revenues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Expenses						
-Operating						
-Other						
Capital						
- Debt Service						
Total Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Net Rev/Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Organics/Recyclables (tons)
GHG Emissions (MMTCO2)

\$/Ton
\$/MMTCO2

A Range of Net Costs Will be Calculated for Each Scenario

- Range may vary by:
 - Region - where regional differences can be identified
 - Size of facility - processing capacity on an annual or daily basis
 - Collection methodology - single stream versus source separated
- Sensitivity analyses will be conducted as necessary

Significant Offsets or Benefits will be Identified for Each Scenario

- Water savings
- Energy savings
- Fuel savings
- Fertilizer and herbicide savings
- Regional differences will be noted where applicable
- Value of offsets or benefits will be quantified where possible

Value of Carbon Credits

- Need to determine method for incorporating into analysis
- Literature search
- Expecting range of values since this is a new area and AB32 regulatory implications not yet clear
- Sensitivity analyses will be conducted to determine range of impacts on final results

“Macro” Economic Analysis

- Using Input/Output economic model for the State of CA
- Modeling impacts of specific organics and recycling industries
 - Size of industry
 - Jobs
 - Wages
 - Production
- Results
 - Multiplier effect - direct, indirect and induced impacts



Data Sources

- CIWMB and CARB resources
 - Solid waste projections
 - Guidance on economic studies
 - Facility information
- Published studies and analyses
 - Cost, revenue and operating data
 - Future facilities and processes information
- RWB studies and analyses
 - Cost, revenue and operating data
- Interviews with selected facility operators in CA
 - CA specific cost, revenue and operating data

Economic Analysis Summary

- Results in 2006 dollars through 2025
 - LCA and results of economic analysis will be used to calculate:
 - \$/MMTCO₂ equivalent
 - \$/ton
 - Offsets and benefits will be quantified, where possible
 - Direct, indirect and induced impacts
- Regions
 - Results by region
 - Results for the State of CA
- Results to be incorporated into GHG model

Next Steps

- Incorporate stakeholder feedback and finalize technical approach
- Data gathering
 - Data requests developed
 - Literature and database reviews
 - Phone interviews
- Prepare economic analysis



Questions?